



**UNIVERSITY OF GOTHENBURG**  
**SCHOOL OF BUSINESS, ECONOMICS AND LAW**

# **The Effect of ESG on a Global Fund Market**

Integrating Environmental, Social and Governance (ESG) in the investment strategy: A Global  
Market Research

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## Abstract:

This paper investigates the different performances of global funds when implementing an ESG-strategy during the period 2013 to 2018. Using the data from Morningstar Direct, consisting of return, Morningstar Sustainability Rating, Morningstar Portfolio Sustainability Score, Portfolio Controversy level and Environmental-, Social-, and Governance- Score, we conduct the regression analysis using the Fama French Carhart model. This paper finds evidence that the performances of the global funds are negatively affected by ESG-strategies in the short run, which are consistent with some previous studies. However, a substantial amount of literature suggest that long term benefits of implementing ESG-strategy exceeds the costs. There is also literature suggesting ESG is a profitable investment since it is less risky, thus a risk-adjusted return would imply similar or higher returns. In the long run, ESG investments are profitable.

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ESG, global funds, environmental responsibility, social responsibility, corporate governance, responsible investments, impact investments, Morningstar

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# **1 Introduction**

## **1.1 Background**

From a teenager, Greta Thunberg, leading students all over the world to climate strike to Blackrock CEO telling companies to actively engage in societal responsibilities, we've found ourselves in a paradigm shift from profit maximization to a sustainability focus. During the previous 20-25 years, several research studies have been made trying to determine whether or not sustainable investing comes at the cost of lower returns (Derwall, Guenster, Bauer & Koedijk, 2005). There has discussions with different outcomes, which would lead the reader to believe that there is more uncertainty than clarity concerning whether sustainable investing comes with a cost or a premium (Galbreath, 2012). The studies made to date have been mostly consisting of self-created portfolios by the researchers themselves. Thus, it would be interesting to broaden the scope and bring the discussion to a global scale by analyzing global funds and the ESG-ratings' influence on returns. Thereby it will hopefully shed some light on whether one could expect a premium or a cost (Derwall et al, 2005).

The world is undergoing a change on a multilateral level in a way that have influenced countries to utilize their resources cooperatively to end poverty and tackle inequalities and climate change by 2030. During the United Nations (UN) summit in September 2015, world leaders unanimously agreed to align their national priorities with 17 goals for sustainable development (Denny, Castro & Yan, 2017). The agenda for 2030 makes this research a well-needed addition to ESG studies to determine whether or not one should be more conscious consumers and investors. For example the Agenda 2030's goals number 8, 10, 12 and 13, all present challenges in both social, environmental and governance areas in which a more responsible way of investing would hopefully contribute to.

Moreover, the meaning of responsible investing is according to Hebb (2013) that there are three interesting forms of investing where responsible investing is one of these types. Firstly there is “impact investing” which means that the focus lies primarily on investing in a way or in a project where the main part is to improve society as a whole. This type of investment strategy is the opposite of “finance first investing” which most people would recognize as the most common perspective when it comes to investment strategies. Finance first implies that the returns from investments are the most important part. Lastly responsible investing is the middle ground between the other two types, in other words, it is where both returns and sustainable factors are valued by using a cost-benefit analysis. Although impact investing would be what might be deemed as the utmost beneficial way to improving society today, it would be as interesting researching if profitability and sustainability goes hand in hand. Therefore this thesis will focus on the mindset where the cost versus benefit plays the largest role and hopefully be able to answer the question if one needs to sacrifice our returns for sustainability on a global level (Hebb, 2013).

Why would a global perspective be beneficial to examine? Well, first of all, there is a small amount of research made on socially responsible investing on a global level which gives an incentive to further build on the amount of literature concerning societal investing. Secondly, as Cortez, Silva, & Areal (2012) argue in their research on the subject they find that time-varying betas could be explained by companies with a good reputation regarding social responsibility, thus, they could to a greater extent be protected from declines in stock prices associated with bad financial times. Therefore socially responsible funds should be less volatile when it comes to performance, and as mentioned by the researchers this issue deserves further research.

## 1.2 Purpose

This thesis is sought to investigate the effect of ESG factors on the performance of global funds. We want to research the difference in excess returns and whether or not the sustainability scores influences performances. Different research presents different results and what seems to be the

underlying factor to these varying conclusions on whether or not impact investments are more profitable depends on their research methods. Hence we would like to bring forth a global perspective using a well-established literature review and examine if the results could be replicated while examining existing global funds. Thus, the total amount of global funds will be treated as one large portfolio to encompass a large as possible scope, and simultaneously eliminate any influence caused by dividing the different funds into portfolios based on industry or market.

### 1.3 Research questions

Prior research made within the ESG area considers either one of the aspects or the integration of the total effect of all three ESG factors. In 2007, nearly 85% of the existing research only consider one of the factors behind ESG and its influence over financial performance (United Nations Environment Program Finance Initiative and Mercer Investment Consulting 2007). However, limiting the research to one aspect of ESG could undermine the moral and ethical demands which in turn are necessary to maintain and develop society today, as well as for future generations (Richardson, 2009). While undermining the morality behind the purpose of ESG it may also lead to one undervaluing the need for investments to maintain future environmental and social systems (Dyllick & Hockerts 2002), hence these limitations could argue for further research needed on ESG's indirect link with financial performance (Galbreath, 2013)

Prior research has shown a variety of suggestions on how the performance of a fund or a stock is affected by the implementation of ESG-strategies within a company. However, this has grown to become a very important demand from both UN, institutional investors as well as individual investors. This area would, therefore, be interesting to investigate further on a global level as this would capture a larger image of the reaction of this new important trend.

*Research Question: What effect from ESG factors can be found on a global fund level? Do global funds perform better when implementing a strong ESG-strategy?*

## 1.4 Expected contributions

This thesis will contribute to an area of up-to-date literature by investigating the unexplored ESG-rating system on the platform Morningstar Direct. This to further investigate whether impact investments are more profitable, especially when including the environmental, social and governance perspective. These three aspects can be included when evaluating a company's risk and return profile. Through answering the question whether it is possible to do well by doing good, this thesis will also contribute to the “unexplored” area of the joint aspect of the environmental, social and governance factors and their linkage to financial performance.

## 1.5 Framework

This introductory part will be followed by a well-established literature review, consisting of previous research and knowledge in order to strengthen our thesis. This section will also include our theoretical framework, which consists of Asset Pricing Theory and Stakeholder Theory amongst other things. Thereafter, the econometric model will be presented and discussed. The fifth chapter will be handling the method of the research, as well as the data treatment and descriptions. The results will then be presented and discussed thoroughly and a connection between previous literature and findings will be made. Lastly, a conclusion of the findings will be summarized in a conclusion.

# **2 Literature review and research discussion**

## 2.1 The concept of ESG

The term ESG has since the early 2000s been becoming more of a focus for many investors but also for the asset- and fund managers. Corporate governance, social and environmental factors in addition to financial factors should now be incorporated into the financial decisions when creating an investment portfolio (Fulton, Mark & Kahn, 2012; Richardson, 2009). These three factors might have a positive, negative or no effect at all on financial performance. However, these three factors have grown to become one of the key indicators of competence- and risk



management, as well as the non-financial performance of the portfolio (Boerner, 2011; Kiernan, 2007; Yegnasubramanian, 2008). The term ESG, incorporates environmental issues (such as climate change, water use, carbon emissions), social responsibility issues (such as the human rights, gender equality, not utilising child labour), and last but not least corporate governance issues (such as controversy, corruption, and bribery) (Galbreath, 2013). In 2006, the United Nations established the six Principles for Responsible Investment (UN PRI, 2006) which almost 900 companies have signed and implemented in their investment strategy (UN PRI, 2011). ESG reporting is today highly related to regulations, standards, legitimacy, and stakeholders (Deegan, 2014).

### *2.1.1 The environmental aspect*

In a world struggling to prevent pollution, recycle and be responsible with carbon emissions; companies need to take responsibility for their actions (Peck, 2011). Some imply that the profitability may be hurt by the increased costs of environmental management initiatives, whilst others suggests that companies might profit from taking actions (Klassen & McLaughlin, 1996).

A company focusing on behaving environmentally responsible might hold more costs compared to other companies which are not involved in environmentally responsible behavior. Ben Woodhouse, director of Global Environmental Issues at Dow Chemical said: *“the degree to which a company is viewed as being a positive or negative participant in solving sustainability issues will determine, to a very great degree, their long-term business viability”* (Visser, 2009).

However, the benefits from the implementation of the long-run sustainable investment strategies might exceed the short-run costs, thus, in the long run, a sustainable mindset might pay off.

Richard J. Mahoney, Chairman and CEO of Monsanto Co. said that their future relies on their environmental performance, and by the help of their good environmental performance, their production, sales, and manufacturing becomes more profitable (Monsanto, 1991). Klassen and McLaughlin (1996) found similar results when researching the future financial performance of

environmental stocks. Weak environmental performance according to Klassen and McLaughlin (1996), lead to negative returns. However, companies implementing an environment strategy on their investment have been both successful and earlier studies have shown both positive and negative effects on the return on capital (Menguc, Auh, & Ozanne, 2009; Sarkis & Cordeiro, 2001).

### *2.1.2 The social aspect*

The inclusion of socially responsible screenings are becoming increasingly popular within the financial investment industry and portfolio managers include this when building their stock portfolios. The question has grown larger whether the incorporation of these screens might enhance the financial performance (Kempf and Osthoff, 2007).

Socially responsible investments take not only return but the societal and ethical impact on the investment into account. This could include problems such as an abusive working environment, fair treatment of suppliers and human rights. It could also be as simple as strengthening diversity and freedom of speech. Socially responsible investments have grown a substantial amount lately, as a result of investors willing to contribute to a better community, researchers have an interest in investigating the financial performance of these funds (Peck, 2011).

Edmans (2012), studied the effect of work satisfaction on the company value by looking at the top 100 companies in America. He found there was a positive relationship between them and the top 100 companies to work for generated 2.3% to 3.8% higher stock returns. This indicated that a high social responsibility at work, leads to higher returns.

Hill, Ainscough, Shank, and Manullang (2007) were one of the first to study the long run effect of CSR on the market value of the company and found positively significant results, indicating there is a positive relationship between having “strong” CSR and performing well. Kempf and Osthoff (2007) found similar results when researching if buying stocks with high socially

responsible ratings and sell stocks with a low socially responsible rating. They found this being beneficiary in the long run and the high scoring stocks had an aberrant return of up to 8.7% per year.

Cortez, Silva & Areal (2012) researched the performance differences on global funds, comparing socially responsible funds with a conventional fund. They did find the support that the conventional funds outperformed ethical funds. This conclusion was also made by Brammer, Brooks, and Pavelin (2006) who evaluated the relationship between SRI stocks and conventional stocks and found that the SRI stocks underperformed the conventional stocks.

### *2.1.3 The governance aspect*

Governance on a corporate level is fundamentally a tool-set of mechanisms created in a way that assures the managers of a company to fulfill their fiduciary responsibility to shareholders. In the absence of good corporate governance, the company could sustain significant damage to both its shareholders as well as their company value, furthermore, poor governance practices could be a sign of other unethical activities and by such further the damages from the lack of governance policies. (Peck, 2011) Increasing the information generated from companies creates an environment which generates higher stock liquidity so in turn corporate governance directly influences the stock market (Chen, Chung, Lee & Liao, 2007; Chung, Elder, & Kim, 2010; Attig, Fong, Gadhoun, & Lang, 2006). Chung et al. (2010) and Balachandran & Faff (2015) found a strong and positive relation between company-level corporate governance and also a companies social behavior to its value. Furthermore, Balachandran & Faff (2015) mention that from a company's perspective governance practices should not be viewed as a must but rather as an opportunity.

Core, Holthausen, & Larcker (1999) provides an argument that weak corporate governance has a strong relationship with agency problems, which in turn are partially created by a higher CEO compensation. Too an extent, a financial compensation scheme for the directors or managers has

been the reason behind previous stock price crashes. Fischer & Verrecchia (1999) as well as other also argues that there is a negative link between disclosure quality and idiosyncratic risk or total risk, which in turn would result in a more volatile investment for a shareholder.

There seems to be a multitude of benefits for companies and stakeholders from strong corporate governance practices still it should not be regarded as a “free lunch”. Increased monitoring and governance practices are costly and could in the short run result in a negative effect on firm value, however with the evidence presented, it is reasonable to agree with Balachandran & Faff (2015) that corporate governance leads to an opportunity for companies to improve.

#### *2.1.4 Combined finding*

The newly coined term Environmental, Social and Governance (ESG) covers a lot more areas compared to the Corporate Responsibility and Corporate Governance (Peck, 2011). ESG involvement in a company could include, exclusion of different types of involvement, such as tobacco, alcohol, pornography and child workers. Other ways to incorporate the ESG in an investment strategy could connote having a dialogue with each and every company of the holding who violates the “ESG-standards” set up by the fund company. Thereafter if the company improves after having a dialogue, the fund manager might reconsider excluding them from their portfolio. This term has grown to become a very important decision tool for fund managers (Peck, 2011; Cortez, Silva & Areal, 2012), but the worrying of underperformance when including these three factors in the investment strategy is also growing (Ashwin Kumar, Smith, Badis, Wang, Ambrosy & Tavares, 2016).

Prior research addressing ESG issues found differences when comparing long term (Fulton, Kahn & Sharples, 2012) with short term (Ashwin Kumar et al., 2016) return on the funds, suggesting some companies might be quite new with the concept. Fulton, Kahn, and Sharples (2012) researched the ESG area by examining over 100 academic studies made within the subject. They found that there is a market correlation between companies with better ESG

strategies and financial performance, thus they outperformed the market. Ashwin Kumar et al. (2016) researched the correlation between ESG performance and volatility of stock returns and found strong evidence that stock performance is dependent on ESG factors. They concluded that companies with high ESG performance also had lower volatility, therefore a lower risk and higher risk-adjusted returns. In opposition to conventional wisdom, which says low risk indicates low return, they found that ESG listed stocks had a higher equity return.

Earlier studies made on the comparison of funds with a high ESG score and funds with low ESG scores have used a quite large time period and found these effects were significant (Fulton, Kahn & Sharples, 2012). Porter and Van der Linde (1995) suggested that the implementation of sustainability thinking and acting will lead to profitability in the long run. However, the high cost of regulations and implementation for the company in the short run result in no change or negative change in performance in the short run.

Derwall and Koedijk (2009) and Bauer, Koedijk, Otten, and Rog  r (2004) studied the differences in performance of ethical funds and SRI funds through multi-factor models and neither found evidence of significant differences in performance of the funds. However, the Institute for Sustainable Investing at Morgan Stanley (2015) investigated this area and found that investing in sustainability usually meet, and often exceed, the performance of comparable traditional investments. They researched both an absolute and a risk-adjusted basis and looked at US-based Mutual Funds and Separately Managed Accounts.

Cortez, Silva, & Areal (2012) argues that it is possible to mitigate risks in a financial crisis through investing in companies that have implemented an ESG-investment strategy. They suggest that time-varying betas could be explained through the reputation of the companies. This reputation can be associated with social responsibility, thus, this reputation could to a great extent protect the companies from a decline in stock/fund prices in bad times. Therefore, socially

responsible funds might be a safer and less volatile choice in bad times, however, researchers suggest this area to be further researched before drawing conclusions.

In summary, Sustainable Investing is stated to yield contradicting results, however, these studies have been made on different markets, and on both funds and stocks. Thus, it will be interesting to investigate further on a global fund market.

### 2.3 Stakeholder theory

Stakeholder theory adds more dimensions compared to shareholder theory where the corporation's main goal would be to maximize shareholder' value (Machan, T. 2009).

Stakeholder theory states that employees, suppliers, customers, and communities are a part of the corporations' interests and that corporations aim should be to maximize the collective welfare for all of the stakeholders (Freeman, 1994). The stakeholder theory is a way to view companies in a more diversified light, which states that a company would thrive if they strive for maximizing the welfare for other groups than only the shareholders (Peck, 2011).

The aspects considered in the stakeholder theory are for example environment, employees, products and services, suppliers, community and human rights (Peck, 2011). Socially responsible companies would want to actively avoid increasing pollution levels as well as creating products and services of good quality created in a sustainable way which in turn does not deplete natural resources. It is also a question of pricing in a socially responsible way and markets the companies services and products responsibly. Additionally, the companies would strive to take human rights and community into account. The company could invest in the community via different activities such as an employee volunteer program. When supporting human rights companies would want to avoid using supplies created in a way that diminishes human rights. Additionally, also not risking to violate human rights while working in other countries directly or indirectly via suppliers etcetera, for example, the use of sweatshops in clothing manufacturing (Peck, 2011).

Since stakeholder theory is only a theory of organizational ethics according to Phillips, Freeman & Wicks (2003), and even though Rawls (1999) managed to broaden the perspective of the theory somewhat there has been critique against his findings in “the law of the peoples 1999” by Benhabib (2002) and Sen (2009) that it is too restricted to comprehend corporations on a global level Jensen & Sandström (2011). Although there is a restriction on previous interpretations of the stakeholder theory Young (2004) and Wicks (1994) presents a wider perspective of the theory which defines stakeholder theory in a way that makes it susceptible to globalization.

Moving on, the stakeholder theory has been proved to be a valuable tool for firm managers to mitigate risks, will it create the same value for funds? From a global fund’s perspective, the stakeholders would constitute only of the managers, eventual employees, shareholders, and the companies the fund invests in. Therefore applying the theory directly even on a global scale would be very limiting in interpreting any results concerning sustainable global funds excess returns. Global fund’s desire to avoid long-term immaterial risks have to lead to the implementation of ESG factors in their screening process, hence it is ever more important for institutional investors to utilize their options and become responsible fiduciaries both from a practical and judicial perspective (Hamilton & Eriksson 2011).

The different types of stakeholders as presented by Frooman & Murrell (2003, 2005) gives an intuition of how different groups of stakeholders influences companies value based upon a dependent relationship between the two parties. Strategic stakeholders have a relationship based on power or influence over a company’s actions, and if neglected could create negative value in the long run. Thus there is a need for funds to employ ESG screening and analyze the different stakeholders' influence on the relationships between the fund’s desired investment choice (company) and its value.

The Swedish AP-funds proved that ESG screening is an important part of their process in their investment decisions and it is presented by Hamilton & Eriksson (2011) in a case study made on the institutional investment funds. The Swedish company Esselte was flagged in the seventh AP-fund's ESG screening of the company and its stakeholders which presented them with the information that Esselte supplier violated human rights by actively firing pregnant women. The AP-fund sold their shares in the company as a consequence. Later on, the media made the human rights violation public, and Esselte had to publicly acknowledge their indirect involvement and the fund avoided the increased risk to their reputation via their screening process. The purpose of the ESG screening is to secure a high return for a low risk, therefore understanding the different layers of the stakeholder theory such as stakeholder influence could give global funds a higher understanding of their own investments.

## 2.4 Sustainable Development Goals and Agenda 2030

January 1st, 2016, 17 goals were established, these goals are universally applicable to all countries and therefore play a big role for many global funds. Countries will make an effort to end all forms of poverty, climate change, and fight inequalities. This also put pressure on financial institutions to act (UN, 2019). The debate of the issue to do well by doing good (Cortez, Silva, Areal, 2012) enhances even more since the financial institutions often are seen as the unseen polluter (Richardson, 2009), as they make profitable investments which further increases to the production of negative externalities (UNEPFI, 2004b). The Sustainable Development Goals call for action for the entire world, poor, rich and middle-income countries to encourage wealth while protecting the planet. The goals encourage financial institutions to implement ESG when considering new investments. These goals are triggers for companies to find new strategies on how to build economic growth whilst acting sustainable (UN, 2019).

## 2.5 Asset pricing theory

One of the common models used to calculate asset prices is the capital asset pricing model (CAPM) which calculates the value of the expected return based on the risk-free rate of return as



well as a risk premium. CAPM is a great yet simple model that is widely used in finance, however, the simplicity of the model brings forth certain problems for testing whether the expected return on global funds generates a surplus when taking the sustainability rating into account (Brooks, 2014). For example, there is likely to be heteroscedasticity in the returns even though more modern research has used a generalized method of moments to create robust returns, furthermore, the beta alone from CAPM is not according to Fama and French (1995) not sufficient to explain expected return. Thus, the capital asset pricing model might not be sophisticated enough to answer our research question.

From the research of Fama and French (1993) they built further upon the capital asset pricing model and created a multifactor model based on three factors rather than just the market rate. Thus, making it more accommodating to the more complex situation whether or not sustainability factors has an influence over the performance of financial assets. The model created by Fama and French is based on times series regression to analyze the return on portfolios. The time series regression is only one of two steps where the other is a cross-sectional regression (Fama, French 1993; Brooks, 2014).

*The Fama French and Carhart model:*

$$R_{i,t} = \alpha_{i,t} + \beta_{i,M}MKTRF_t + \beta_{i,S}SMB_t + \beta_{i,H}HML_t + \beta_{i,W}WML_t \quad (1)$$

Carharts factor which is based on the momentum effect from the previous years goes under several names however the one used will be winners-minus-losers (WML). The factors MKTRF, SMB and HML are created to mimic the portfolios return value, company size and excess return and R is the return for a given portfolio i at the specific time t (Brooks, 2014).

### 2.5.2 Cross-sectional

In the research made by Fama and French (1993), several portfolios of stocks are created to act as indices, thereafter, these portfolios get divided into two ways. The portfolios are divided by high or low values of their respective book-to-market ratios and their market capitalization. This to mete the sensitivity of each individual portfolio or fund and thereafter receive a factor loading of each of these individual portfolios. For each portfolio (i), they received a set of factor loadings since each portfolio “is the subject of a different times series regression and will have different sensitivities to the risk factors”. After receiving the factor loadings, they were then used as the explanatory variables in a cross-sectional regression. However, it is worth mentioning that Carhart did not employ the cross-sectional approach in his study (Brooks, 2014)

For the second part of the model, the factor loadings from the first stage is used as explanatory variables in the cross-sectional regression which gives the interpretation of the regression parameters as factor risk premia. This will show the amount of extra return generated by increasing the source of risk by one additional unit (Brooks, 2014).

## 3 Econometric model

The model used in this thesis will be based on the Fama-French and The Carhart multifactor model which is also one of the more commonly employed multi-factor models in finance (Brooks. 2014). Additionally, the employed model will be adjusted to take sustainability into account via the use of certain scores or indices. Instead of the return, the dependent variable will be excess return which demonstrates whether or not a sustainable investment strategy generates abnormal returns.

### 3.1 Base factors of the multifactor model

These four following factors will be a part of all regressions in this research study compared to the sustainability factors which will be analyzed separately.

### 3.1.1 MKTRF

Fama and French-based the factor for excess return (MKTRF) on the difference between the S&P 500 index and the US Treasury bills yield.(Brooks .2014)

### 3.1.2 SMB

Small minus big (SMB) is created in a way which gives the name a highly representative role. The SMB factor is calculated by the difference in returns between a portfolio of small and respectively the return of a portfolio of large stocks. (Brooks .2014)

### 3.1.3 HML

High minus low portfolio returns (HML) represents the value premium and is the difference between the returns between a value portfolio with high book-to-market equity and a portfolio of growth stocks with low book-to-market equity. Through this, a simple average between the high and the low will give a fair estimate of the risk factor in returns related to the book-to-market equity and it will also show the difference in return behaviors of high- and low- book-to-market equity companies (Fama and French, 1993; Brooks, 2014).

### 3.1.4 WML

Carhart 1997 performed a study on mutual fund performance and found a lagged effect or a persistence generated by the previous year's stock performance. "Winners-minus-losers" (WML) is measured by calculating the difference between the worst- and best-performing stocks from the previous year. This, to quantify the tendency for stock prices to continue increasing, after a period of increase (Jegadeesh and Titman, 1993).

$$ER_{i,t} = \alpha_{i,t} + \beta_{i,M}MKTRF_t + \beta_{i,S}SMB_t + \beta_{i,H}HML_t + \beta_{i,W}WML_t \quad (2)$$

### 3.2 Sustainalytics

Sustainalytics is one of the leading global providers of corporate environmental, social and governance research, ratings and analysis. They provide insights required for investors and companies to make investment decisions by taking environmental, social and governance factors into consideration (Sustainalytics, 2019).

### 3.3 Morningstar Portfolio Sustainability Score

The Portfolio Sustainability Score is an asset-weighted average of normalized company-level ESG scores with deductions made for controversial incidents by the holdings such as environmental accidents, fraud, or discriminatory behavior. The score ranges between 0-100, a high score indicates that the fund has invested in companies with better sustainability thinking (Morningstar Category Classifications, 2016; Sustainalytics, 2019). Furthermore, the research will include the three separate factors which are the foundation for the complete sustainability (ESG) score. The scores for E, S, and G, ranges also between 0-100 where a high score indicates a strong strategy in that respective area (Morningstar Category Classifications, 2016).

### 3.4 Abbreviations for sustainability score variables

1. PSS - Portfolio Sustainability Score (ESG)
2. PES - Portfolio Environmental Score
3. PSOC - Portfolio Social Score
4. PGS - Portfolio Governance Score

### 3.5 Final model

The final model, which will be the one used in this study, will be the four factors from Fama, French and Carhart with the added factors for sustainability, which is represented by (X). The regressions will be performed individually with one of the factors sustainability and one without any factors for sustainability.

$$ER_{i,t} = \alpha_{i,t} + \beta_{i,M} MKTRF_t + \beta_{i,S} SMB_t + \beta_{i,H} HML_t + \beta_{i,W} WML_t + \beta_{i,X} X_t \quad (3)$$

## 4 Method

*This thesis purpose is to increase the understanding of sustainability factors on investments decisions on a global scale, hence we have chosen a suitable research method which is both reliable and frequently used in the finance community.*

### 4.1 Alternative research methods

The two most used research methods are qualitative and quantitative research method (Bryman & Bell, 2017). These are two ways to generate, process and analyze the information which is received when collecting data or sample.

A qualitative method usually includes interviews, questionnaires, and this research method is usually used when a problem is in need for a complex problem, and the use of “soft data” is collected. Soft data could be ex. interviews and the interpretation of analyses (texts or surveys) (Patel & Davidsson, 2011). Through this method, emotions, beliefs and more behavioral aspects can be examined on a much deeper level of knowledge (Holme & Solvang, 1997). This method is, unfortunately, time demanding and expensive to perform and it is often hard to gather a large enough sample to receive the significant result (Bryman & Bell, 2017).

A quantitative research method focuses on data collection, the statistical process, quantification, and analysis. This method is usually referred to as collecting “hard data”, ex. when researching the stock market and the goal is to collect as much data as possible. This research method results in an objective, interpretable, and generalizable result which is beneficiary for researchers (Patel & Davidsson, 2011; Jacobsen, 2002).

## 4.2 Our chosen research method

There are a lot of studies made within the ESG- and sustainable investing area and this study will therefore, take a descriptive approach (Patel & Davidsson, 2011). The study will follow a deductive approach, where existing theories will be used as a foundation, and since this area has been studied before and this study will be an addition to past researches (Bryman & Bell, 2017). The study will begin with investigating existing past literature and research within the ESG-area and thereafter, a potential gap was found within the comparison of long term and short term differences on sustainable funds. With the new tools, such as Portfolio Sustainability Score, Morningstar Sustainability Rating, etc, from Morningstar, an easier framing can be made on the funds, whether they are sustainable or not. This paper will examine short-run, which in this case will represent a time frame of 5 years. This because this is a quite new phenomenon and if data on 10 years would have been used, the ESG-focused funds (most of which was launched within the last 5 years) would not be included in our data set (Morningstar, 2019).

Since this study will investigate whether there is excess return between sustainable funds and unsustainable funds, and not the emotions, beliefs and more behavioral aspect of why people invest sustainably, a quantitative research method will be used in this paper. A large collection of data will be needed for significant results which is also a reason why a quantitative research method should be used (Patel & Davidsson, 2011).

## 4.3 Data collection

### *4.3.1 Data*

The Morningstar platform is one of the leading platforms for research investments with 30 years of experience in the field. Therefore, all fund data acquired for the research is collected from Morningstar. Furthermore, the platform also provides us with insight into different indices and benchmark for sustainability such as their own sustainability ranking. Given Morningstar's large insight in investment research and sustainability ranking of funds and stocks makes them a

highly suitable option to acquire all data on financial and sustainable factors (Morningstar, 2019). The original factors from the Fama-French model are collected from Kenneth French's website which

#### 4.3.2 *Dependent variable*

The differences in excess return are what can determine whether a more sustainable focus from a fund's perspective would generate returns that are superior to the market risk-free return. Therefore the focus will be to examine if there is a pattern between ESG factors and excess return.

#### 4.3.3 *Independent variables*

Our first four independent variables are derived from the Fama and French four-factor model and these are; the *Risk-Free Market Return* (MKTRF), *Small Minus Big* (SMB), *High minus low* (HML) and *Winners minus losers* (WML) (Fama and French, 1993; Brooks, 2014). The fifth factor that we have used as our independent variable is *Portfolio Sustainability Score* due to the fact that in its calculation includes environmental, social and governance factors when evaluating companies and funds. It also takes controversial incidents into account which is an important factor since it could affect the investors in a bad way as we saw in the Swedbank and Danske Bank's possible involvement in money laundering (Schwartzkopff & Ummelas, 2019).<sup>1</sup>

### 4.4 Regression

In prior research, many have used the Fama & French Three-Factor, and Carhart Four-Factor Models, we found the Carhart Four-Factor model most suitable for our research as we wanted to

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<sup>1</sup> We used the global factors from Fama & French Website in our regressions. Although the global version of the Fama-French factors might have flaws, they are not in any way a negative addition to this research but more on the contrary since it has allowed the results to be based on accredited and peer-reviewed research. The results show evidence for a small size bias as our SMB-coefficient is significant and negative, indicating that expected returns of the small-cap global stocks outperform large-cap global stocks.

be able to include a momentum factor for asset pricing of stocks (Brooks .2014). To be able to control for ESG-factors, we also included the fifth variable, Portfolio Sustainability Score (Morningstar Category Classifications, 2016; Sustainalytics, 2019).

$$ER_{i,t} = \alpha_{i,t} + \beta_{i,M} MKTRF_t + \beta_{i,S} SMB_t + \beta_{i,H} HML_t + \beta_{i,W} WML_t + \beta_{i,X} X_t \quad (4)$$

## 4.5 Data treatment

The multi-factor model regression is processed via the program STATA, a statistical software package which provides data analysis, data management and visuals (Stata, 2018)

### 4.5.1 Missing data and outliers

To limit the chance of influencing the results in any way all funds with missing data for variables was removed prior to the regression. Extreme values were also excluded from the data used in the regression via the use of winsorizing.

### 4.5.2 Winsorizing

The use of this procedure mitigates the influence of outliers on the mean as well as on the variance thereby creating more robust estimators of location and variability. Firstly this process is a common practice in social sciences to test significance and secondly, surveys from educational and psychological literature demonstrate that even modest differences from normality skews the mean and variance (Blaine, 2018). The dataset consists of almost 500 000 observation and therefore should be large enough to use 1% to winsorize so the 1% to 99% will be kept.

### 4.5.3 Heteroscedasticity

Using STATA allows to directly run a robust regression which in turn corrects for homoscedasticity. However there is also the option to test for heteroscedasticity in two ways,



Breusch-Pagan / Cook-Weisberg test and Cameron & Trivedi's decomposition of IM-test, both proved significant hence heteroscedasticity is present.

#### 4.5.4 Autocollinearity

When a set of data is correlated with itself that implies there is autocorrelation present. Values ordered over space or time that show a higher covariance than zero are said to be autocorrelated, which in time series data is usually referred to as serial correlation (McInturff, A. 2018). The Wooldridge test shows whether or not autocorrelation is present and the test is significant for the data, thereby serial correlation is present.

## 5. Results and discussion

*In this section, we will present our results and thereafter discuss and analyze them carefully. Firstly, we will present the summary statistics, which we will use as a tool when analyzing and interpreting our regression. Secondly, we will present our correlation table, and lastly, our regression will be presented and interpreted using our literature review and theories as guidance.*

### 5.1 Summary statistics

Table 1 - Summary statistics.

Variable	Obs	Median	Mean	Std. Dev.	Min	Max
ER	454,187	0.53	0.2141	3.1601	-9.05	8.09
MKTRF	454,187	0.87	0.4039	3.0698	-8.19	7.32
SMB	454,187	-0.19	-0.0721	1.3960	-3.09	2.93
HML	454,187	-0.33	-0.2107	1.8076	-4.45	4.35
WML	454,187	0.52	0.3667	2.2881	-4.22	6.01

E, S & G	454,187	49.26	49.3743	2.5176	34.91	61.07
ENVIRONMENTAL	454,187	56.14	56.0292	2.7358	40.83	64.97
SOCIAL	454,187	55.13	55.2161	2.6118	39.98	66.23
GOVERNANCE	454,187	53.33	53.5071	2.6151	40.88	63.47

Table 1 exhibit the summary statistics of our data, the means, standard deviations, and the min/max values of observations. The data collected consists of 454 187 observations collected between December 31st, 2013 until December 31st, 2018. The global funds have an average monthly excess return of 0.2 percent points and a median excess return per month of 0.53 percent points. In this case, the median is a suitable tool for analyzing our results since many global funds follow an index, thus have similar returns. The median of Portfolio Sustainability Score is 49.26 points and the mean score is 49.37 points. The score span varies with, 34.91 being the lowest score and 61.07 being the highest score, which implies small differences in ESG-scores between funds on a global market level. When separating the three factors into portfolio scores, we find them averaging a bit higher, with Portfolio Environmental Score being 56,.02 points, compared to the Portfolio Sustainability Score. This because the PSS include more factors such as controversy.

Considering our Fama French Carhart factors, (High-Minus-Low), which account for value, (Small-Minus-Big) which account for size, and (Monthly-Momentum) which accounts for both size and value, we find our momentum portfolio to outperform our SMB and HML portfolios, which show negative return. The Excess return of HML (-0.21%) is in accordance with Cakici & Topyan (2014), who found high HML stocks outperforming low HML stocks.

## 5.2 Correlation table

The correlation table which can be found in the appendix as table 2, gives an insight into whether two variables depend on each other. What can be said is that there is generally a “healthy” level of correlation between the variables in the dataset. A healthy correlation is between 0-0,5, everything above this is viewed as a strong correlation which we want to avoid (Brooks, 2017). Our correlation matrix presents two results which must be highlighted. The correlation between the momentum factor and the size factor is strongly correlated and might, therefore, interfere with our regression result. Although the correlation is high, it is not necessary to be alarmed since it was expected to us. This was also presented by Fama and French (2017) in their research on how their factors fared on a global level.

one could argue that a large enough number of global funds would eventually become equal to or close to the market excess return due to the global funds’ structure mimicking the global market, hence so would also the respective return behave. Therefore it might arise a need for adjustments in the Fama-French model to be made when applied on a large number of global funds to avoid having complications with the dependent and independent factors being correlated. Even though, there might be explanations behind the high correlation between the excess return from the funds and the excess market return, it does not change the fact that the coefficient MKTRF is not explanatory of the excess return, or in other words, it does not add value to our analysis.

### 5.3 Regression results

Table 3 - the 5 different regression results

VARIABLES	Base Factors	Combined Sustainability Factors	Environmental Factor	Social Factor	Governance Factor
MKTRF	0.974*** (0.00126)	0.974*** (0.00126)	0.974*** (0.00126)	0.974*** (0.00126)	0.974*** (0.00126)
SMB	-0.0752*** (0.00235)	-0.0753*** (0.00235)	-0.0752*** (0.00235)	-0.0752*** (0.00235)	-0.0754*** (0.00235)
HML	0.00141 (0.00252)	0.00143 (0.00252)	0.00143 (0.00252)	0.00143 (0.00252)	0.00145 (0.00252)
WML	0.00463*** (0.00132)	0.00461*** (0.00132)	0.00459*** (0.00132)	0.00458*** (0.00132)	0.00453*** (0.00132)
E, S and G		-0.0119*** (0.00124)			
ENVIRONMENTAL (E)			-0.0123*** (0.00107)		
SOCIAL (S)				-0.0146*** (0.00108)	
GOVERNANCE (G)					-0.0241*** (0.00107)
Alpha	-0.198*** (0.00229)	0.390*** (0.0614)	0.492*** (0.0601)	0.611*** (0.0602)	1.094*** (0.0576)
Observations	454,187	454,187	454,187	454,187	454,187
Number of funds	7,597	7,597	7,597	7,597	7,597
$R^2$	0.8136	0.8137	0.8137	0.8137	0.8140

Robust standard errors in parentheses

The *SMB-coefficient* is negative (-0,065) and statistically significant on a 1% significance level. This indicates that the global fund has higher expected returns if small-cap global stocks outperform large-cap global stocks, suggesting that the fund contains predominantly large-cap stocks. The *HML-coefficient* is not significant, thus we will not discuss this further.

The *WML-coefficient* is positive and statistically significant. This factor is added to capture the effect on the expected rate of return on equity of the funds. The t-value of the coefficient displays a value of 0.0055 and is statistically significant on a 1% level. The value of the WML is very small and we, therefore, find a minimal effect on the expected rate of return on equity of the funds.

Our *MKTRF-coefficient* is positive and statistically significant on a 1% level and it takes a value of 0.974. A beta equal to one evidence a portfolio which follows market index and therefore has a return and risk equal to the market index. If beta is smaller than one, this indicates a lower risk and lower return. A beta of 0.974 indicates market volatility slightly lower than that of the market. However, the portfolio beta is very close to one, thus we will have volatility very close to the market risk and return.

The *alpha-coefficient* of our models are both positive and negative, and statistically significant on a 1% level. The alpha captures the risk-adjusted return of the portfolio and with a positive value of alpha indicates that our portfolio of funds outperforms the market, vice versa.

According to  $R^2$  this regression explains almost all the variability of the response data around its mean, it explains 82,68% which is quite high. This is due to our large sample.

The negative results from the regression do imply that an increase in sustainability practices would generate lower excess returns, however as stated earlier, the purpose of ESG-screenings is to secure a high return at a lower risk. Therefore, the results raises the question of whether or not there is an underlying factor between the incurred lower returns and level of risk. The seventh AP-fund managed to generate a lower risk according to Hamilton & Eriksson (2011) research and this might be the cause behind taking ESG-factors into account in investment strategies in the short run.

Our result finds evidence for what Porter and Van der Linde (1995) suggested in their study, the cost of implementation and regulation will in the short run, “eat up” the profitability of the return. However, we cannot conclude ESG-performance having a positive effect on the return in the long run. Ben Woodhouse(Visser, 2009), director of Global Environmental Issues at Dow Chemical found companies who focused on environmental issues holding more costs, but that these costs, in the long-run would determine the company’s long term business viability. Richard J. Mahoney, Chairman, and CEO of Monsanto Co (1991) agreed on this matter and said their future relies on their environmental performance. Through the new development within their environmental performance they can develop their production, sales, and manufacturing and become more profitable.

When including our Social factor in the regression, we find no evidence for what Hill et. al. (2007) and Kempf and Osthoff (2007) found. They investigated the long run effect of social responsible investments on a company or a stock and found it being beneficiary in the long run. The coefficient PSOC is negative and statistically significant and we find support in what Cortez, Silva & Areal (2012) and Brammer, Brooks, and Pavelin (2006) found in their research, that SRI stocks and funds underperformed conventional stocks and funds.

Core, Holthausen, & Larcker (1999) provides evidence that suggests weak corporate governance has a strong relationship with agency problems. Our findings show a different outcome since the Governance coefficient is negative and statistically significant. This, suggesting, higher governance ratings lead to lower returns. According to Fischer and Verrecchia (1999), this will lead to a smaller idiosyncratic risk or total risk, which in turn would result in a less volatile investment. Balachandran & Faff (2015) agrees with both research papers above and suggests corporate governance is an opportunity to improve but it is not a “free lunch”, and comes with high costs of implementation. Our findings, therefore, support both of these studies, that investing in governance, will lead to higher costs in the short run but it is necessary in the long run as the investment becomes less risky, however this should be further analyzed in the long run to be able to conclude anything.

The stakeholder theory presents us with a toolset to analyze the results in a way which enables the ESG screening to be positive for both corporations as well as society as a whole, therefore we believe that a less restricted version of the original theory will aid us in understanding our results. By bringing forth a wider perspective of the stakeholder theory in hope to be able to fully understand the depth and importance of ESG-screenings and as well the investments funds make to mitigate risks while preserving their levels of return on a global scale.

## **6. Conclusion**

In the short-run, a fund would have a higher cost according to the results, since, what can be derived from the regression is that the higher the sustainability score the lower excess return. Considering our research only focus on five-year data, we cannot draw any conclusions regarding if a sustainable strategy might pay off in the long run. The regression results do not give any explanation to why there is a lowered level of excess return from sustainable investment strategies however there could be underlying implications which this research do not investigate. Such factors could for example be the cost of research and development for more sustainable production solutions in the companies or perhaps previous governing methods have enabled unclear accounting which could lead to a misleading valuation of companies. With 10-15 years

of data, research can be made on the effect of the return in the long-run, and evidence which strengthens our theory that the benefits will exceed the costs and that a sustainable strategy might pay off in the long run. Thus, there would not be a need to sacrifice excess returns for sustainability on a global level. In addition to this, as presented earlier there is literature which argue that the implications from sustainable investment strategies might lead to lower risk connected with price declines caused by financial crises.

The results clearly state that there is a negative impact on excessive return from sustainable investment strategies in the short run however as mentioned this is only a small part of the whole picture. Therefore we cannot determine whether a fund would benefit or not from having a strong ESG strategy although there is evidence which argues both for and against.

On one hand, investors with a shorter time-horizons should evidently benefit from funds with lower ESG scores and on the other hand, institutional investors such as the Swedish AP-funds would according to literature benefit more from investing in companies with a stronger ESG strategy. Thus becoming a fund with a higher sustainability score and long-term benefits which might outweigh the loss from abstaining from the benefits of short-run unsustainable investments. One could argue intuitively that the increased returns from sustainable investments in the short run might be representative of the negative externalities accompanied with unsustainable actions, therefore it might be a more representative return since the costs associated with the companies the funds invest in would incorporate the complete cost to produce said return. Although this seems interesting it requires further research to determine if there is any credibility to such arguments as well as whether or not funds would benefit from sustainable investment strategies.

As restrictions becomes stricter, for example, Agenda 2030, companies will be forced to implement ESG-strategies and costs will appear in every company in the end. Companies with an already highly efficient ESG-strategy today, will therefore be better off in the future.



Should restrictions become stricter, for example, Agenda 2030 then it would force companies to implement ESG-strategies and incur costs whether they could afford to or benefit from sustainable investments. This could then imply that companies or funds with an established ESG-strategy gains a competitive advantage, thus, being better off in the future.

When separating our three factors, we find evidence for which one of them is creating value in the short run or if all three are costly to implement. We can conclude all three to be negative and statistically significant, thus agreeing with many past researchers that all three factors are expensive to implement. We recommend that future research should incorporate a larger time span to be able to capture the real effect of these four factors. Furthermore, as we and many other researchers can agree on the lower levels of risks associated with strong corporate governance, strong social responsibility and last but not least, pro-environmental strategy, thus, risk adjustment would be a great complement to include in future studies.

## **7 Limitations and suggestions for further research**

This study contains certain limitations which could be eliminated in future research. These enhancements will be presented and discussed in this section.

### **7.1 Regression**

Due to Morningstar Directs undeveloped database, we were not able to receive yearly or monthly data in Portfolio Sustainability Score which would be helpful as fund companies develop their ESG-strategy yearly and some companies might have started out with a non-existent or low sustainability score. The regression would have been more representative if we would have had access to this data. However, there is monthly data available from 2018-08, and this would therefore, be an excellent area to research further in 5-10 years, as data will be more accessible. Another complication we found using Morningstar as our database is that the evaluation of Portfolio Sustainability Score has not yet been made on every global fund, thus, we had to

exclude unrated/unevaluated funds which might lead to a biased sample as every fund included in our data set works with improving their ESG-thinking within the company.

Developing ESG-strategies and investment strategies has been found to generate higher costs in the short run. As the strategies develop, the costs will result in higher benefits and more secure and less risky investment. As ESG-rating and scoring is a quite new concept, this might generate a less profitable way to raise the company's performance and over time this might improve as well.

## 7.2 Future research

After conducting our research, we found several limitations which creates an array for future research. Firstly, analyzing both long term and short term effect of the return when investing responsible and sustainable. Secondly, through monthly or yearly data on Portfolio Sustainability Score, the results would be more representable and interpretable. As an addition to this, using a more representable Fama French Factors could be helpful for future research. Inclusion of more variables that could affect the return of the fund or variables which divide the data into better categories could be interesting to research further in order to strengthen the results. Thus, researching the effects of the return in the long run, by the help from monthly/yearly data on sustainability, return, and Fama French Factors would be interesting future research.

## 8. Appendix

Table 2 - Correlation matrix

	ER	MKTRF	SMB	HML	WML	PSS	PES	PSOC	PGS
ER	1								
MKTRF	0.901***	1							
SMB	-0.0361** *	-0.00403**	1						
HML	-0.0336** *	-0.0377***	-0.0527***	1					
WML	-0.205***	-0.227***	0.0860***	-0.630***	1				
PSS	-0.0129** *	-0.00392**	-0.00457**	0.00340*	-0.00270	1			
PES	-0.0175** *	-0.00776** *	-0.00413**	0.00443**	-0.00292*	0.778***	1		
PSOC	-0.0171** *	-0.00569** *	-0.00398**	0.00397**	-0.00313*	0.846***	0.893***	1	
PGS	-0.0250** *	-0.00590** *	-0.00762** *	0.00478**	-0.00419**	0.829***	0.708***	0.767***	1

Test 1 - Ramsey test: omitted variable test.

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Ramsey RESET test using powers of the fitted values of ER

Ho: model has no omitted variables

---

F(3, 454175) = 2213.30

Prob > F = 0.0000

---

## Test 2 - IM-test

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	33203.360	44	0.000
Skewness	1326.790	8	0.000
Kurtosis	2291.080	1	0.000
Total	36821.230	53	0.000

## Test 3 - Heteroskedasticity test

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
Ho:	Constant variance Variables: fitted values of ER
	chi2(1) = 2229.01 Prob > chi2 = 0.0000

## 9. Bibliography

Ashwin Kumar, N., Smith, C., Badis, L., Wang, N., Ambrosy, P., & Tavares, R. (2016). ESG factors and risk-adjusted performance: A new quantitative model. *Journal of Sustainable Finance & Investment*, 6(4), 292-300.

Attig, Fong, Gadhoun, & Lang. (2006). Effects of large shareholding on information asymmetry and stock liquidity. *Journal of Banking and Finance*, 30(10), 2875-2892.

Balachandran, B., & Faff, R. (2015). Corporate governance, firm value and risk: Past, present, and future. *Pacific-Basin Finance Journal*, 35, 1-12. doi:10.1016/j.pacfin.2015.07.002

Bauer, Koedijk, & Otten. (2005). International evidence on ethical mutual fund performance and investment style. *Journal of Banking and Finance*, 29(7), 1751-1767.

Brammer, S., Brooks, C., & Pavelin, S. (2006). Corporate social performance and stock returns: UK evidence from disaggregate measures. *Financial management*, 35(3), 97- 116.

Blaine, B. (2018). Winsorizing. 1817-1818.

Brooks, C. (2014). *Introductory econometrics for finance* (3.rd ed.).

Benhabib, S. (2002). *The claims of culture: Equality and diversity in the global era*. Princeton: Princeton University Press.

Boerner, H. (2011). Sustainability and ESG reporting frameworks: Issuers have GAAP and IFRS for reporting financials—What about reporting for intangibles and non-financials? *Corporate Finance Review*, 15, 34–37.

Cakici N., and Topyan, K. (2014). *Risk and Return in Asian Emerging Markets: A Practitioner's Guide*. Springer. ISBN 9781349472062

Chen, W., Chung, H., Lee, C., & Liao, W. (2007). Corporate Governance and Equity Liquidity: Analysis of S&P transparency and disclosure rankings. *Corporate Governance: An International Review*, 15(4), 644-660.

Chung, K., Elder, J., & Kim, J. (2010). Corporate Governance and Liquidity. *Journal of Financial and Quantitative Analysis*, 45(2), 265-291. doi:10.1017/S0022109010000104

Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, 51(3), 371-406.

Cortez, M., Silva, F., & Areal, N. (2012). Socially Responsible Investing in the Global Market: The US and European Funds. *International Journal of Finance & Economics*, 17(3), 254-271.

Deegan C. 2014. An overview of legitimacy theory as applied within the social and environmental accounting literature. In *Sustainability Accounting and Accountability*, Bebbington J, Unerman J, O'Dwyer B (eds). Rout

Denny, D. M., Castro, D. M., & Yan, E. (2017). Agenda 2030 measurements and finance interaction of international investment law and sustainability. *Veredas Do Direito*, 14(30), 53-76.

Derwall, J., Guenster, N., Bauer, R., & Koedijk, K. (2005). The Eco-Efficiency Premium Puzzle. *Financial Analysts Journal*, 61(2), 51-63.

Derwall, J., & Koedijk, K. (2009). Socially Responsible Fixed-Income Funds. *Journal of Business Finance & Accounting*, 36(1-2), 210-229.

Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130-141.

Edmans, A. (2012). The Link Between Job Satisfaction and Firm Value, With Implications for Corporate Social Responsibility. *Academy of Management Perspectives*, 26(4), 1-19.

Fama, & French. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1), 3-56.

Fama, E. F., & French, K. R. (1996). Then CAPM is wanted, dead or alive. (capital asset pricing model). *Journal of Finance*, 51(5), 1947.

Fama, E. F., & French, K. R. (2017). International tests of a five-factor asset pricing model. *Journal of Financial Economics*, 123(3), 441-463. doi:10.1016/j.jfineco.2016.11.004

Fischer, P. E., & Verrecchia, R. E. (1999). Public information and heuristic trade. *Journal of Accounting and Economics*, 27(1), 89-124. doi:10.1016/S0165-4101(98)00046-9

Freeman, R. (1994). The Politics of Stakeholder Theory: Some Future Directions. *Business Ethics Quarterly*, 4(4), 409-421.

Frooman, J., & Murrell, A. J. (2003). A LOGIC FOR STAKEHOLDER BEHAVIOR: A TEST OF STAKEHOLDER INFLUENCE STRATEGIES. *Academy of Management Proceedings*, 2003(1), F1-F6. doi:10.5465/AMBPP.2003.13792281

Frooman, J., & Murrell, A. J. (2005). Stakeholder Influence Strategies: The Roles of Structural and Demographic Determinants. *Business & Society*, 44(1), 3-31. doi:10.1177/0007650304273434

Fulton, M., Kahn, B, & Sharples, C. (2012) Sustainable Investing: Establishing Long-Term Value and Performance. Available at SSRN: <https://ssrn.com/abstract=2222740> or <http://dx.doi.org/10.2139/ssrn.2222740>

Galbreath, J. (2013). ESG in Focus: The Australian Evidence. *Journal of Business Ethics*, 118(3), 529-541. doi:10.1007/s10551-012-1607-9

Hamilton, I., & Eriksson, J. (2011). Influence strategies in shareholder engagement: a case study of all Swedish national pension funds. *Journal of Sustainable Finance & Investment*, 1(1), 44-61. doi:10.3763/jsfi.2010.0006

Hebb, T. (2013). Impact investing and responsible investing: what does it mean? *Journal of Sustainable Finance & Investment*, 3(2), 71-74.

Hill RP, Ainscough T, Shank T, Manullang D. 2007. Corporate social responsibility and social responsible investing: a global perspective. *Journal of Business Ethics*. 70(2): 165–174.

Jegadeesh, N. and Titman, S. (1993) Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency. *The Journal of Finance*. Vol. 48, No.1, pp.65-91

Jensen, T., & Sandström, J. (2011). Stakeholder Theory and Globalization: The Challenges of Power and Responsibility. *Organization Studies*, 32(4), 473-488. doi:10.1177/0170840611400290

Kempf A, Osthoff P. (2007). The effect of socially responsible investing on portfolio performance. *European Financial Management* 13(5): 908–922.

Kiernan, M. J. (2007). Universal owners and ESG: Leaving money on the table? Corporate Governance: *An International Review*, 15, 478–485.

Klassen, R., & McLaughlin, C. (1996). The Impact of Environmental Management on Firm Performance. *Management Science*, 42(8), 1199-1214.

Machan, T. (2009). Stakeholder vs. shareholder theory of the ethics of corporate management. *International Journal of Economics and Business Research*, 1(1), 12-20.

McInturff, A. (2018). Autocorrelation. In B. Frey (Ed.), *The SAGE encyclopedia of educational research, measurement, and evaluation* (pp. 156-157)

Menguc, B., Auh, S., & Ozanne, L. (2009). The interactive effect of internal and external factors on a Proactive environmental strategy and its influence on a firm's performance. *Journal of Business Ethics*, 94(2), 279–298. doi:10.1007/s10551-009-0264-0

Monsanto Co. 1991. *Environmental Annual Review*, 1991 p. 2.

Institute for Sustainable Investing Morgan Stanley (2015). Sustainable Reality: Understanding the Performance of Sustainable Investment Strategies. *Institute for Sustainable Investing*

Morningstar. (2016). Morningstar Category Classifications.

Morningstar. (2016). Morningstar Portfolio Carbon Metrics Data Point Definitions

Peck, S. W. (2011). *Investment ethics*. Hoboken, NJ: Hoboken, NJ : John Wiley & Sons.

Phillips, R. A., Freeman, R. E., & Wicks, A. C. (2003). What stakeholder theory is not. *Business Ethics Quarterly*, 13 (4), 479–502.

Porter, M., & Van der Linde, C. (1995). Toward a New Conception of the Environment-Competitiveness Relationship. *Journal of Economic Perspectives*, 9(4), 97-118.

Rawls, J. (1999). The law of peoples: With 'the ideal of public reason revisited'. Cambridge MA: *Harvard University Press*.



Richardson, B. (2009). Keeping Ethical Investment Ethical: Regulatory Issues for Investing for Sustainability. *Journal of Business Ethics*, 87(4), 555-572.

Sarkis, J., & Cordeiro, J. J. (2001). An empirical evaluation of environmental efficiencies and firm performance: Pollution prevention versus end-of-pipe practice. *European Journal of Operational Research*, 135(1), 102-113. doi:10.1016/S0377-2217(00)00306-4

Schwartzkopff, F. & Ummelas, O. (2019). Swedbank Hit by Criminal Probe in Growing Laundering Crackdown. Retrieved from <https://www.bloomberg.com/news/articles/2019-04-12/estonia-expands-danske-bank-criminal-probe-to-include-swedbank>

Sen, A. (2009). *The idea of justice*. Cambridge: Belknap Press of Harvard University Press.

Sustainalytics, (2019). Retrieved at <https://www.sustainalytics.com/about-us/>

Sustainalytics, (2018). Sustainalytics Controversies Research. Retrieved at <https://www.sustainalytics.com/controversies-research/#1482352879777-ebfb8fdd-0440>

UN (2019). The Sustainable Development Agenda. Retrieved at <https://www.un.org/sustainabledevelopment/development-agenda/>.

UN PRI. (2006). Principles of responsible investment. Retrieved at <http://www.unpri.org/files/pri.pdf>.

UN PRI. (2011). Annual report of the PRI initiative 2011. Retrieved at [http://www.unpri.org/publications/annual\\_report2011.pdf](http://www.unpri.org/publications/annual_report2011.pdf).

UNEPFI: 2004b, Generation Lost: Young Financial Analysts and Environmental, Social and Governance Issues. Executive Summary (UNEPFI, Geneva)

United Nations Environment Program Finance Initiative and Mercer Investment Consulting. (2007). *Demystifying responsible investment performance*. New York: United Nations Environment Program Finance Initiative and Mercer Investment Consulting.

Visser, W. (2009). Changing Course. *The Top 50 Sustainability Books*, 1(116), 87-90.

Yegnasubramanian, A. (2008). Environmental, social and governance: Moving to mainstream investing? San Francisco: *Business for Social Responsibility*.

Young, I. M. (2004). Responsibility and global labor justice. *The Journal of Political Philosophy*, 12 (4), 365–388.

Wicks, A., Gilbert, D., & Freeman, R. (1994). A feminist reinterpretation of the stakeholder concept. *Business Ethics Quarterly*, 4(4), 475.